

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Promoting Technological Solutions to Combat	)	GN Docket No. 13-111
Contraband Wireless Device Use in Correctional	)	
Facilities	)	
	)	
CellAntenna Corp. Request for Amendment of	)	RM-11430
Section 2.807 of the Commission’s Rules (47	)	
C.F.R. § 2.807) to Allow the Use of Radio	)	
Frequency Jamming Equipment by Local and	)	
State Law Enforcement Agencies and Emergency	)	
Response Providers	)	
	)	
Petition of The GEO Group, Inc. for Forbearance	)	ET Docket No. 08-73
from Application of Sections 302, 303, and 333 of	)	
the Communications Act of 1934, as amended,	)	
and Sections 2.803 and 2.807 of the Commission’s	)	
Rules to Allow State and Local Correctional	)	
Authorities to Prevent Use of Commercial Mobile	)	
Radio Services at Correctional Facilities	)	
	)	
CTIA—The Wireless Association Petition for	)	WT Docket No. 10-4
Declaratory Ruling Regarding the Unlawful Sale	)	
and Use of Cellular Jammers and Wireless	)	
Boosters and Repeaters	)	
	)	
South Carolina Department of Corrections	)	PRM09WT
Request for Authorization of CMRS Jamming	)	
Within Correctional Institutions in Order to	)	
Improve Public Safety Under Conditions that	)	
Protect Legitimate CMRS Users	)	
	)	
Mississippi Department of Corrections Request for	)	PRM09WT
Authorization of Managed Access Systems Within	)	
Correctional Institutions in Order to Improve	)	
Public Safety Under Conditions that Protect	)	
Legitimate CMRS Users	)	
	)	
Global Tel*Link Corp. Request for Amendment of	)	PRM11WT
Sections 22.3(b), 1.931 and Subpart X of the	)	
Commission’s Rules and Creation of New Rule(s)	)	
to Authorize a Plurality of Technical Solutions to	)	
Eradicate the Unauthorized Use of Wireless	)	
Devices in Correctional Facilities	)	

CellAntenna Corp. Request for Amendment of	)	PRM11WT
Section 20.5 of the Commission's Rules, 47	)	
C.F.R. § 20.5, to Categorically Exclude Service to	)	
Wireless Devices Located on Local, State, or	)	
Federal Correctional Facility Premises	)	
	)	
Rates for Interstate Inmate Calling Services	)	WC Docket No. 12-375

**COMMENTS OF  
MARCUS SPECTRUM SOLUTIONS LLC**

**SUMMARY**



It is untraditional to begin comments with photographs, but we do this for an important point: this proceeding is very different from *most* FCC proceedings which usually determine economic benefits for one party or another. This proceeding concerns an unintended consequence of today's CMRS communications technology that directly results in death or serious injury to innocent people. Carl Lackl, a murder witness shown at left was murdered himself as a result of a "hit" ordered by a prisoner over a cell phone and Capt. Robert Johnson, a South Carolina prison guard who was grievously

wounded in his home in a similar event.<sup>1</sup> **Not since the Commission's 1990 deliberations over 2 deaths in a helicopter crash into a North Carolina cellular tower that violated the Commission's Rules has there been such a clear matter of life and death at FCC.**<sup>2</sup>

These comments review the legal options available to the Commission and propose an new alternative to suppress the dangerous epidemic of calls from contraband cell phones within prisons: putting the burden on the carriers who are in a much better position to deal with the problem than the local and state governments that operate prisons.

## **BACKGROUND**

Marcus Spectrum Solutions LLC (MSS) is the consulting practice of Michael J. Marcus, Sc.D., F-IEEE, a retired senior executive from FCC who worked at the Commission nearly 25 years in both the spectrum policy and enforcement areas. His qualifications are well known to the Commission.<sup>3</sup> MSS participated in the drafting of two of the cited petitions on this issue and these topics has been discussed numerous

---

<sup>1</sup> <http://www.wbaltv.com/news/19058560/detail.html>

<http://video.foxnews.com/v/4346513/south-carolinas-prison-cell-phone-problem>

<sup>2</sup> In the Matter of VIRGINIA METRONET, INC. d/b/a CENTEL CELLULAR COMPANY OF VIRGINIA Notices of violations of Commission's Part 17 marking and lighting rules regarding the construction of two antenna structures in the Norfolk-Virginia Beach-Portsmouth, Virginia Metropolitan Statistical Area to provide cellular service from Domestic Public Cellular Radio Service Station KNKA330, Order, 5 FCC Rcd 740; *See* [http://www.apnewsarchive.com/1990/Centel-Agrees-to-Pay-\\$1-Million-to-Government/id-559bbd80ff77dbe2e537279523d1ac86](http://www.apnewsarchive.com/1990/Centel-Agrees-to-Pay-$1-Million-to-Government/id-559bbd80ff77dbe2e537279523d1ac86)

<sup>3</sup> FCC Press Release "FCC Engineering Michael J. Marcus Honored by Institute of Electrical and Electronics Engineers (IEEE)" February 3, 2004, ([http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-243463A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243463A1.pdf))

times in our blog, *SpectrumTalk*.<sup>4</sup> These comments are not being submitted on the behalf of and do not necessarily represent the viewpoint of any past or present client and are being submitted purely in the public interest.

The issue of cell phone use in prisons differs significantly from many other issues: **It is a clear and present danger to the public and real people die as a result.** This is not an issue of economic loss, competitive advantage, market share, or “harmful interference”. Simply put, **it is a matter of life and death** unlike most issues before this agency.

### **PETITIONS LEADING TO THIS PROCEEDING**

This NPRM is captioned with 7 petitions. The treatment of these petitions has been unusual if not unprecedented.

On November 2, 2007, CTIA, the Wireless Association (CTIA) filed a Petition for Declaratory Ruling (CTIA Petition) addressing both issues concerning CMRS signal boosters and jamming in prisons and elsewhere. The petition asks the Commission to “immediately issue a declaratory ruling that the sale and use of cellular jammers – with the exception of sale to and use by the federal government – is unlawful”.<sup>5</sup>

On January 6, 2010, more than 2 years later, the Wireless Telecommunications Bureau asked for public comment on this petition<sup>6</sup> however the bureau explicitly stated “The CTIA Petition also addresses the use of signal jamming devices, but *we are not seeking comment on this issue in this proceeding.*” (Emphasis added.) While this CTIA

---

<sup>4</sup> See <http://www.marcus-spectrum.com/Blog/files/category-prison-jamming-issue.html> and <http://www.marcus-spectrum.com/Blog/files/category-prison--cellphone-use.html>

<sup>5</sup> Section III of the petition goes on to say that “While the Communications Act permits the blocking of commercial wireless communications, it strictly limits the conditions under which jamming may occur” but does not give any legal citation for these provisions of the Act.

<sup>6</sup> Public Notice, DA 10-14 January 6, 2010 ([http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DA-10-14A1\\_Rcd.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-14A1_Rcd.pdf))

petition is available on the CTIA website<sup>7</sup>, it does not appear to be anywhere on the FCC's voluminous website! Not until the issuance of the instant NPRM on May 1, 2013, nearly 6 years after the CTIA petition did FCC ask for comment on most of the rest of the CTIA petition.

A review of the cover page of the NPRM also reveals that 2 petitions were captioned with "PRM09WT" and 2 with "PRM11WT" in the location where a docket number or RM number might be normally expected. Discussions with experienced lawyers inside and outside the FCC revealed that these numbers were unprecedented in a public document and their significance was unclear. However it was discovered that these unusual numbers relate to an "undocumented feature" of the Commission's Electronic Comment Filing System (ECFS) where petitions "in limbo" reside before they are either put on public notice for comment or dismissed.

Thus the 4 petitions cited on the cover pages of the NPRM with "PRM" numbers from South Carolina Department of Corrections (and 30 other correctional agencies), Mississippi Department of Corrections, Global Tel\*Link Corp., and CellAntenna Corp. sat for years without either a request from comment or dismissal. These petitions can be found in ECFS<sup>8</sup> using the "undocumented feature" of entering the PRM number in the "Proceeding Number" box, but they can not be found through the more normal approaches even though they are cited in the NPRM.

The treatment of South Carolina Department of Corrections (SCDC) petition<sup>9</sup>, filed August 6, 2009, that is cosigned by 30 other state correctional systems and 2

---

<sup>7</sup> [http://files.ctia.org/pdf/filings/FINAL--CTIA-\\_Jammers\\_Petition\\_for\\_Declaratory\\_Ruling.pdf](http://files.ctia.org/pdf/filings/FINAL--CTIA-_Jammers_Petition_for_Declaratory_Ruling.pdf)

<sup>8</sup> [http://apps.fcc.gov/ecfs/comment\\_search/input?](http://apps.fcc.gov/ecfs/comment_search/input?)

<sup>9</sup> <http://apps.fcc.gov/ecfs/document/view?id=7019934920> (This URL was found by entering "PRM09WT" into ECFS.)

regional systems is also rather surprising. For an agency whose statutory purposes include “the purpose of promoting safety of life and property through the use of wire and radio communications”<sup>10</sup> it seems odd that comments were never requested on this petition from multiple public safety agencies until the instant NPRM and even this NPRM seems to be crafted to avoid comment on the jamming issue, rather rationalizing this based on the “preferences” of the wireless industry<sup>11</sup>:

(W)ireless providers have indicated a preference for managed access solutions over jamming solutions, on the grounds that managed access “can effectively prevent unauthorized communications without disrupting legitimate users.” Wireless providers point to benefits of managed access over jamming solutions including the coordination and leasing process that occurs between the managed access provider and relevant licensees, and to system design that utilizes low power base stations optimized to prevent interference or the unintentional disruption of service to wireless devices operating legitimately outside of the target facility.” (Reference omitted)

While the preferences of the wireless industry should be considered, their attempt to shift the burden and cost of this public safety issue that is an unintended consequence of their technology primarily to local governments that are ill prepared for exotic communications technology and are struggling with unprecedented financial problems should not be accepted on the mere basis of “preference” but balanced with other options in the public interest. Perhaps major US intelligence agencies have successfully used MAS to limit calling on their campuses, but they are in a much better position to do so than struggling local governments and their correctional systems.

The GTL petition<sup>12</sup> also raises a variety of issues that are ignored in the NPRM and which should get public comment. These deal with the legal issue of whether the Commission has the authority to authorize jamming by nonfederal spectrum users under

---

<sup>10</sup> 47 U.S.C. 151

<sup>11</sup> NPRM at para. 20

<sup>12</sup> <http://apps.fcc.gov/ecfs/document/view?id=7021696615> (Again, found through the use of the PRM number indicated.)

any circumstance and pragmatic ways to facilitate the introduction and operation of MAS systems. While the NPRM proposes such improvements to the MAS authorization process that would be helpful, it totally ignores the GTL proposals without any explanation and does not even ask for comment on them.

§1.403 of the Commission's Rules states:

**Notice and availability.**

All petitions for rule making (other than petitions to amend the FM, Television, and Air-Ground Tables of Assignments) meeting the requirements of § 1.401 will be given a file number and, promptly thereafter, a "Public Notice" will be issued (by means of a Commission release entitled "Petitions for Rule Making Filed") as to the petition, file number, nature of the proposal, and date of filing. Petitions for rule making are available at the Commission's Reference Information Center, 445 12th Street, SW, Washington, DC and may also be available electronically over the Internet at <http://www.fcc.gov/>. (Emphasis added.)<sup>13</sup>

While there is no explicit analogous timeliness requirement for other petitions, the petitions for rulemaking filed by SCDC, GTL, and CellAntenna appear to have been entitled to the promptness required by §1.403 and yet were denied this timely treatment.

In the comments below we will review the issues raised by both SCDC and GTL which we feel are key to the public interest deliberations in this proceeding.

**THE ILLUSIVE SEARCH FOR A "MAGIC BULLET"**

Those of us who are fans of classic films may recall the 1940 film *Dr. Ehrlich's Magic Bullet*,<sup>14</sup> which tells the story of Nobel Prize-winning Dr. Paul Ehrlich and his search for a chemotherapy cure for syphilis that would have no side effects. While he thought he had such a cure, modern antibiotics have since replaced it with far fewer side effects.

---

<sup>13</sup> 47 C.F.R. 1.403

<sup>14</sup> <http://www.imdb.com/title/tt0032413/>

The cellular industry and the Commission are searching for a “magic bullet” that will eliminate the dangerous scourge of cellular use in prisons while not impacting cellular operations and requiring little or no expenditure of money or effort by the cellular industry. It is a fond dream, but it will not happen in the real world.

### **CCST Report**

The NPRM mentions<sup>15</sup> and describes a report<sup>16</sup> on the efficacy of managed access by The California Council on Science and Technology (CCST), an independent organization that advises on science and technology policy in California – in effect the PCAST of the California state government. This report was prepared at the specific request of California Legislature.<sup>17</sup> The NPRM describes the report as follows:

The CCST recommended that alternative interdiction methods be examined before statewide adoption of managed access, including methods to intercept contraband devices rather than relying on technology to block communications, and recommended that CDCR conduct a one-year managed access pilot program prior to awarding a managed access contract.. CCST also raised several concerns it has regarding managed access, including the lack of operational experience due to the relative infancy of the technology, the possibility of systems capturing authorized devices outside of a correctional facility, difficulties in upgrading systems to add new wireless technologies, and the ability of the systems to capture text and incoming calls in practice. (References omitted)

Perhaps in deference to the “preference” of wireless providers, the NPRM description of the CCST report given in the footnote omits other findings of the report. In particular, one of the main recommendations of the report is “Pursue, in coordination with other states and federal legislators, prison specific exceptions to Federal

---

<sup>15</sup> NPRM at fn. 53

<sup>16</sup> The California Council on Science and Technology, THE EFFICACY OF MANAGED ACCESS SYSTEMS TO INTERCEPT CALLS FROM CONTRABAND CELL PHONES IN CALIFORNIA PRISONS (CCST Report), May 2012 (<http://www.ccst.us/publications/2012/2012cell.pdf>)

<sup>17</sup> *ibid.* at p. 3-6



Communications Commission (FCC) anti jamming regulations.”<sup>18</sup> Thus the independent CCST believes that FCC should consider allowing jamming in the prison context as part of a total solution. This issue was the core of the South Carolina Department of Corrections Petition and a major issue in the GTL petition although the NPRM tries to discourage discussion of it in comments.

The CCST report also recommends “Engage the cell phone carriers to identify use of their technology and to deny connections for unregistered cell phones from within prison locations”.<sup>19</sup> The NPRM contains a section on “Requesting Termination of Service to Contraband Devices”<sup>20</sup> that deals with carriers responding to prison administrators identification of cell phones in prisons, however this places the whole burden on the prison administration to identify cell phones on prison premises. The last section of these comments proposes an alternative that will work in rural prisons which house most of the maximum security inmate population and constitute the most serious part of this issue.

### **Funding of MAS**

MAS may seem attractive to some as a low cost solution to the cellphone in prison problems if it can be implemented as California has contacted for as a zero cost contract bundled with Inmate Communications Services (ICS). However, the impact of this cost shifting may be conflict with the Commission’s goals in Docket 12-375 in bringing ICS rates closer to market costs. Indeed it would be ironic if inmates who have used only ICS were to be charged for communications a surcharge to maintain the MAS system when they did not contribute to that problem. While it is possible that MAS may

---

<sup>18</sup> *ibid.* at p. 7

<sup>19</sup> *ibid.* at p. 7

<sup>20</sup> NPRM at para. 65-69

have little cost impact on ICS in such contracts, this is only if the revenue from diversion of traffic from illicit cell phones to ICS is greater than the cost of MAS operation. The NPRM does not raise this issue at all. While MAS is expensive, the overall cost of recidivism to society is much higher than that of any of the options in this proceeding. It is well known that familial contact reduces recidivism.<sup>21</sup> If MAS is funded by increasing ICS charges the next cost to society from increased recidivism may dwarf any cost savings to state and local governments by using this contract vehicle. Thus the Commission may wish to consider in Docket 12-375 whether MAS should be an allowed cost in determining ICS pricing.

The solution to dramatically decreasing cell phone use in prisons will involve multiple approaches depending on the local environment. As will be shown below the geography of the prison is a key factor. Nontechnical approaches are also important. The Commission's ongoing efforts to decrease calling charges from public phones in prisons<sup>22</sup> will decrease the number of phones smuggled into prisons for benign illicit use by inmates wanting to keep in touch with their families. The smaller availability of cell phones within prisons will then make malignant use more visible and more difficult.

### **MAS Implementation Issues in a Hostile Environment**

The physical structure of prisons greatly varies from institution to institution. Maximum security prisons are, of necessity built, with strong materials that generally raise difficult radio propagation issues. Thus reliable coverage of all parts of the interior as well as exterior areas between buildings of such prisons generally requires the

---

<sup>21</sup> L. Charkoudian *et al.*, The Role of Family and Pro-Social Relationships in Reducing Recidivism, American Corrections Association, (<https://www.aca.org/fileupload/177/ahaidar/Flower.pdf>)

<sup>22</sup> [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2013/db0710/DOC-322109A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0710/DOC-322109A1.pdf)

presence of multiple denial system transmitters inside the prison for *both* MAS and jammer approaches to cell phone coverage denial. While the campuses of intelligence agencies may be a friendly environment for electronics to deny cell phone coverage, intelligence agency employees adhere to different norms than many inmates. The interior of prisons is a very hostile environment for electronic systems intended to control the actions of inmates. In reality, state and local prisons have minimal staffing, particularly at night due to the budget problems affecting all levels of governments these days.

MAS systems inside prison need both multiple transmitters and “backhaul” connecting the transmitters as in normal cellular infrastructure as well as power access. Inmate attacks on either the transmitters or their backhaul which in most cases will be wiring extending through multiple areas will negate the intended function of MAS. The minimal staffing of most state and local prisons makes prevention of such attacks problematic. Jamming systems are at least somewhat easier to protect physically in that they do not require backhaul as each jammer can be autonomous. However, jammers, like MAS devices, do require power within prisons and both their power and the transmitters are subject to inmate attack.

### **“Burner Phones”**

Virtually all illicit cell phones found in prison are no contract prepaid cell phones. The uncontrolled sale of these no cell phones, called “burner phones”<sup>23</sup> in the criminal context, is another contributor to the problem and needs regulatory attention.

Did you ever wonder why it is harder to buy a single box of Sudafed<sup>24</sup> than a bag full of prepaid cellphones? Prepaid cell phone have an antisocial potential as does Sudafed, but one that is totally uncontrolled at present. Many industrialized countries such as U.K., France, Japan, Greece, and Mexico require identification to buy prepaid cell phones or even SIM cards. By contrast, as late as 2010 the major U.S. provider of prepaid service asked for name and address as part of the phone registration process, but on their website told the customer “If you want to skip this step, “[click here](#)”<sup>25</sup> as shown in the figure below:

---

<sup>23</sup> <http://www.urbandictionary.com/define.php?term=%20phone> (A Google search on “burner phone” yielded Walmart as the 7<sup>th</sup> listing. This likely means that Walmart is targeting the burner phone market.)

<sup>24</sup> <http://www.fda.gov/drugs/drugsafety/informationbydrugclass/ucm072423.htm>

<sup>25</sup> <http://www.marcus-spectrum.com/Blog/files/7faed24d4b57f54395aedff46dde3003-40.html>

**TRACFONE**  
THE CELL PHONE THAT PUTS YOU IN CONTROL

NO BILLS NO CONTRACTS NO SURPRISES YOU'RE

**ACTIVATE PHONE**

Account Info **Phone Set Up** Activation Overview

**Please create your account to manage and keep track of your TracFone activity.**

Why do we ask for this information? To find out [click here](#)

**Personal Information**

First Name:   
 Last Name:   
 Home Phone #:   -  (Ex: 305-123-4567)  
☐ Yes! I would like to receive prerecorded messages regarding special offers and promotions from TracFone at the number provided above.  
 Date of Birth:  Month  Day  Year

**Account Information (Required)**

ZIP Code:   
 Email:  (Ex: john@abc123.com) [Help](#)  
 Confirm Email:   
 Password:  (Minimum 6 characters) [Help](#)  
 Confirm Password:   
 Security Question:  Select a Question to Answer [Help](#)  
 Answer:

If you wish to skip this step, please [click here](#)

**Figure 1:** Registration website (2010) of a major carrier offering prepaid “burner” cell phones – Note last line “If you wish to skip this step please click here”

(After all, if you are activating a bag full of cell phones for your fellow gang members, it is rather inconvenient to have to make up and keep entering dozens of false names and addresses.)

It is unclear how many providers of prepaid no contract service actually make a realistic attempt to document the name and address of the customer and have a reliable list.

There is a legitimate need by some users, *e.g.* battered spouses, for a cell phone without normal documentation of the user. But to date neither the Commission nor the cellular industry have not started *any* open discussion of any alternative to the present unlimited sale of anonymous prepaid no contract phones that would balance these needs with legitimate public safety issues. This balancing will be difficult, but the recent Snowden revelations about intelligence agency collection of “metadata” makes the *status quo* look rather questionable. While there has been no known cell phone activated IED attack in the US (and hopefully there never will be), if this ever happens there will be a public demand for immediate limitations on sale of anonymous cell phones. Isn’t it better to start a slow and deliberate dialogue now to consider the matter?

### **Canine Detection**

Cellular interests have previously urged correction authorities to use detection dogs to help find contraband cell phones even when they are turned off. The reason why detection dogs often work is clearly because the chemicals used in *current* cell phones that emit a distinct odor that the dogs can detect. However, at no point did the cellular interest ever suggest a regulatory standard or even a voluntary standard for the odor of future cell phones. Thus if local government invested scarce tax dollars in expensive trained detection dogs, the investment might be obsoleted by a new model of cell phone that does not have the odor of the usual cell phones just as a plastic gun could obsolete metal detectors at airports and other secure locations.

### **JAMMING**

For at least 6 years the main goal of cellular interests seems to have been **not** to solve the problem, but to avoid both any legitimization of jamming as even a legitimate

partial solution to this problem and any impact on the cellular industry in solving the problem that is the unintended consequence of

- 1) the ubiquity of cellular communications
- 2) the shrinking size of handsets and
- 3) the uncontrolled sale of “no contract”/”pay as you go” handsets.

MSS recognizes the cellular interests legitimate concerns about uncontrolled jamming and its impact on both the operations of cellular carriers and on public safety issues. In this Internet age, cellular jammers sold through web sites by offshore manufacturers are easy enough to find and purchase and difficult to interdict.

### **Current Illicit Marketing of Non-Prison Jammers**

Below is a current Internet add for such a jammer, use of Google search results in many other alternative suppliers:

#### 4G Cell Phone Jammer Portable



RRP: \$499.00  
Your Price: **\$399.00**  
(You save \$100.00)  
SKU: TSJ-4G-1055A4G  
Rating: ★★★★★ ( 1 product review )  
Availability: In Stock  
Quantity:  [ADD TO CART](#)

  
[SHARE](#) [f](#) [t](#) [e](#) ...

---

#### Product Description

By popular demand, we now offer the very highly requested 4G cell phone jammer in a portable version. This pocket / briefcase model will go with you and provide cell phone jamming up to 25 meters with a battery that will last on average 2 hours. (intermittant use is suggested as opposed to constant use).

The unit will also block GSM, PCS, and 3G signals, so you can rest assured that you're getting complete coverage on 5 seperate bands.

1.0 Watts of output power per channel means you've got the power to clear an area of chatter and security threats with this very powerful signal jammer.

**Figure 2:** Internet advertising for a cellular jammer

But given the limited enforcement resources of FCC and the impact of Internet marketing the jammer problem can not be solved by focusing **exclusively** on supply side issues. If the much larger enforcement resources of DEA and ICE can not keep illegal drugs out of the US, FCC by itself can not keep foreign-made cell phone jammers out of the US. Vilifying jamming<sup>26</sup> even in the most benign remotely located prison context may appear to some as an aid to keep jammers out of the hands of the general population, but it really serves no constructive purpose other than deny law enforcement agencies a legitimate tool that has to be used carefully in conjunction with other tools to control a real public safety threat.

### **Jammer Demand Side Issues**

As in the War on Drugs, true control of this problem will only come from working on **both** the supply problem and the demand problem. The cellular industry's naïve focus on blocking all nonfederal use of jamming under all circumstances while ignoring why individuals, outside of corrections officials, might want to buy jammers. The recent FCC enforcement action against Taylor Oilfield Manufacturing, Broussard, Louisiana has the revealing text:

The manager also claimed that Taylor Oilfield utilized the jamming devices to prevent its employees from using their cellular phones while working, apparently following a near miss industrial accident that allegedly was partially attributable to employee cell phone use.<sup>27</sup>

---

<sup>26</sup> <http://ctia.org/media/multimedia/sa/index.cfm/mma/june-09-wow-insider-interview-contraband-in-prisons> This interview refers to foreign experience that allegedly had interference to the general public “3 miles” away.

<sup>27</sup> *Notice of Apparent Liability for Forfeiture and Order*, File No.: EB-FIELDSCR-12-00002428, April 9, 2013 at para. 4 ([http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2013/db0409/FCC-13-46A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0409/FCC-13-46A1.pdf))



Does the cellular industry have any other alternatives for firms such as Taylor?

A not rare public viewpoint of cellular is summarized in this figure from a blog published not by an antiestablishment radical group, but rather by a major communications law firm: Does the cellular industry have any other alternatives for firms such as Taylor? A not rare public viewpoint of cellular is summarized in this figure from a blog published not by an antiestablishment radical group, but rather by a major communications law firm:



**Figure 3:** Graphic from a recent blog post from a telecom law firm

The rejection of the Commission proposals in Docket 04-435 that would have enabled cell phone use in commercial airplanes was nominally based on obscure technical issues, but really was based on an outpouring of 8,123 comments almost universally opposed to being exposed to cell phone use by others in a new environment.

(The fact that such use is allowed in other countries shows that the technical issues are solvable.)

Most of the interest in cell phone jamming outside of prisons arises from inattention of the cellular industry to the societal impact of their product. Only if the cellular industry addresses these concerns will the demand for jamming devices for nonprison use lessen.

In 2005 Motorola, then a dominant manufacturer of both cell phones and cellular infrastructure, commissioned a report from Don Norman of the Nielsen Norman Group, author of *Living with Complexity* and "*The Design of Everyday Things: Revised and Expanded*". The report is entitled "Minimizing the Annoyance of the Mobile Phone: The Annoyance, Irritation, and Frustration of The Mobile Phone -- A Design Challenge"<sup>28</sup> and begins with

It is easy and fun to think of the great advances in telecommunications, computation, and entertainment that will mark the next few years. But while we may relish the thought of all those wonderful technologies and opportunities, let us also remember that these come at a cost. The cost is partially monetary, but more and more it is in human-measures: annoyance, irritation, and frustration. It is what makes us wish to throw away the technology even as we embrace it. We are in real danger of a consumer backlash against annoying technologies. (Emphasis added.)

We believe that it is this predicted "consumer backlash" which is the driving force towards increased use of illegal jammers in nonprison environments. The appropriate way to counter this real concern is to address the root causes of this "consumer backlash" by either addressing the recommendations of the Motorola/Norman report or by doing similar analyses and considering alternative approaches. The vilification of *any* prison cellphone jamming by implying it will inevitably cause interference miles away or in other bands neither addresses the root cause of the cellular industry's concern on

---

<sup>28</sup> [http://www.jnd.org/dn.mss/minimizing\\_the\\_annoyance\\_of\\_the\\_mobile\\_phone.html](http://www.jnd.org/dn.mss/minimizing_the_annoyance_of_the_mobile_phone.html)

nonprison jamming nor it is in the public interest. Jamming is no more of a magic bullet than is MAS, but that does not mean that it should not be an option under careful rules to control it that also limit it to prisons with large distances from the general public.

Uncontrolled unauthorized jamming in the environment can be dangerous and disruptive, but it will continue to be a problem until the cellular industry come to grips with some of the antisocial aspects of uses of their service that inspired the Figure 2 illustration. An absolute prohibition of all prison jamming under controlled circumstances will not solve the industry's fundamental problem, rather it will be the classic "band-aid solution.

### **Prison Jamming in Other Countries**

CTIA has cited drastic results of poorly planned jamming in other countries.<sup>29</sup> It has not cited nor does the NPRM cite any examples of countries that have authorized jamming in a responsible way.

French national law<sup>30</sup> explicitly permits the use of jamming in both prisons and performance halls ("*Les salles de spectacles*"). While the UK has never made a public announcement, an Ofcom source has told us that the UK permits cellular jamming in prisons. In June 2013, the Commission's Australian counterpart, the Australian Communications and Media Authority (ACMA) granted an exemption to the New South Wales Department of Corrective Services for a 12 months trial with the technology to be rolled out to prisons across the state should it prove successful. At end of the trial

---

<sup>29</sup> <http://ctia.org/media/multimedia/sa/index.cfm/mma/june-09-wow-insider-interview-contraband-in-prisons>

<sup>30</sup> Code des postes et des communications électroniques (France), LIVRE II , TITRE Ier, CHAPITRE II, SECTION 1, Article L33-3 (<http://www.legifrance.gouv.fr/affichCodeArticle.do?idArticle=LEGIARTI000006465759&cidTexte=LEGITEXT000006070987&dateTexte=20040709>)

Corrective Services will report to ACMA and carriers on the success of the trial, based on pre-agreed performance indicators such as: field trial monitoring and reporting arrangements, interference management protocols, consumer complaint handling and information arrangements, and the establishment of a field trial working group.<sup>31</sup>

### **“Overjamming” – Actually a Concern for Both Jamming and MAS**

#### **Approaches**

While cellular interests are quick to say that jamming will inevitably result in “overjamming”<sup>32</sup>, they never mention this concern in the context of their preferred “managed access systems”. At the Commission’s September 30, 2010 public workshop on prison cell phone use<sup>33</sup>, then PSHSB Chief Jaime Barnett mentioned that he visited a prison MAS test and it was so effective that his secretary could not reach him in the prison parking lot.

The reality is that “overjamming”, to use the cellular industry’s term, is inevitable in **both** jamming and MAS. The truth is that in prisons with little physical separation between secure areas and areas open to the public<sup>34</sup> there is no reliable way to use prison-based electronic techniques to deny access to cell phones anywhere within the prison with 100% reliability of both coverage within the prison and lack of impact

---

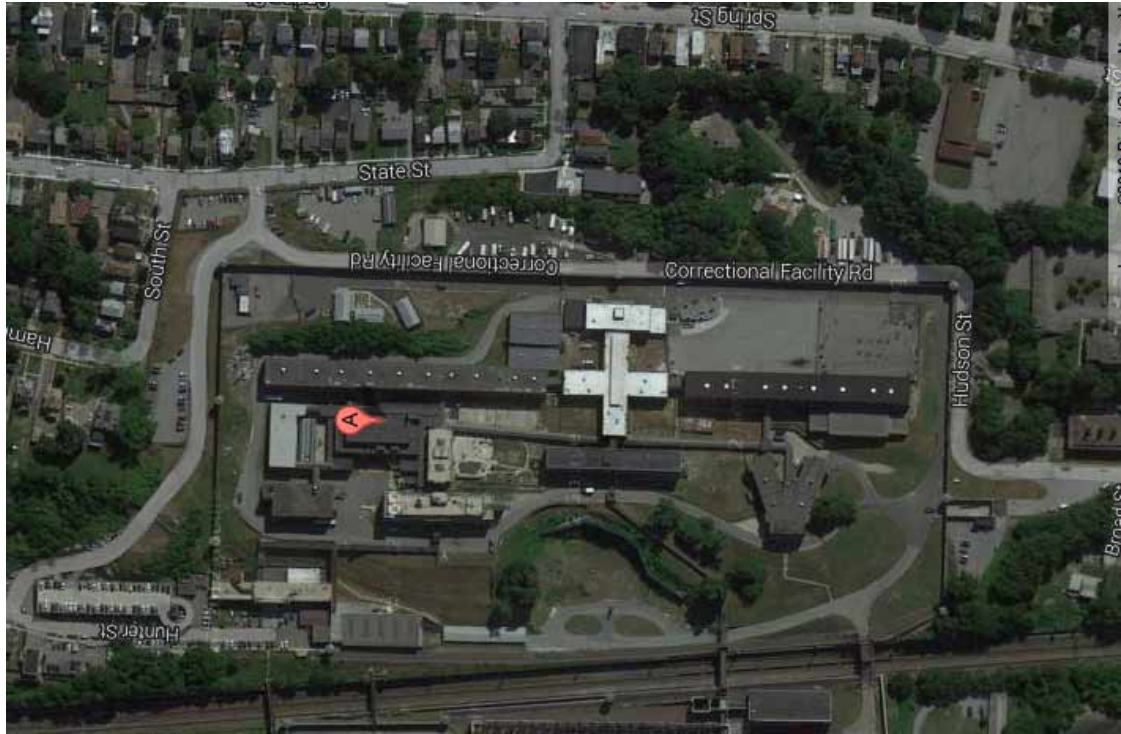
<sup>31</sup> <http://www.itnews.com.au/News/345524,mobile-signal-jammed-in-nsw-prisons-from-july.aspx> ; <http://www.itnews.com.au/News/335518,liftoff-for-nsw-prison-mobile-jamming-trial.aspx>

<sup>32</sup> CTIA comments to NTIA, June 2010

<sup>33</sup> An archived video of the workshop, written remarks, presentations, statements, briefing sheet, and a transcript are available through the Commission’s Website at <http://www.fcc.gov/events/workshopwebinar-contraband-cell-phone-use-prisons>. See Public Safety and Homeland Security Bureau to Hold Workshop/Webinar on Contraband Cell Phone Use in Prisons, Public Notice (Sept. 13, 2010)

<sup>34</sup> Examples include Sing Sing Correctional Facility, Ossining, NY and the Arlington County Detention Facility, Arlington VA. However, most maximum security prisons are in rural areas and do have a large buffer area between secure areas and areas accessible to the public.

outside the prison. Sing Sing Correctional Facility, Ossining, NY, shown below, is an example of an older prison with little physical separation from neighboring streets and with neighbors living nearby



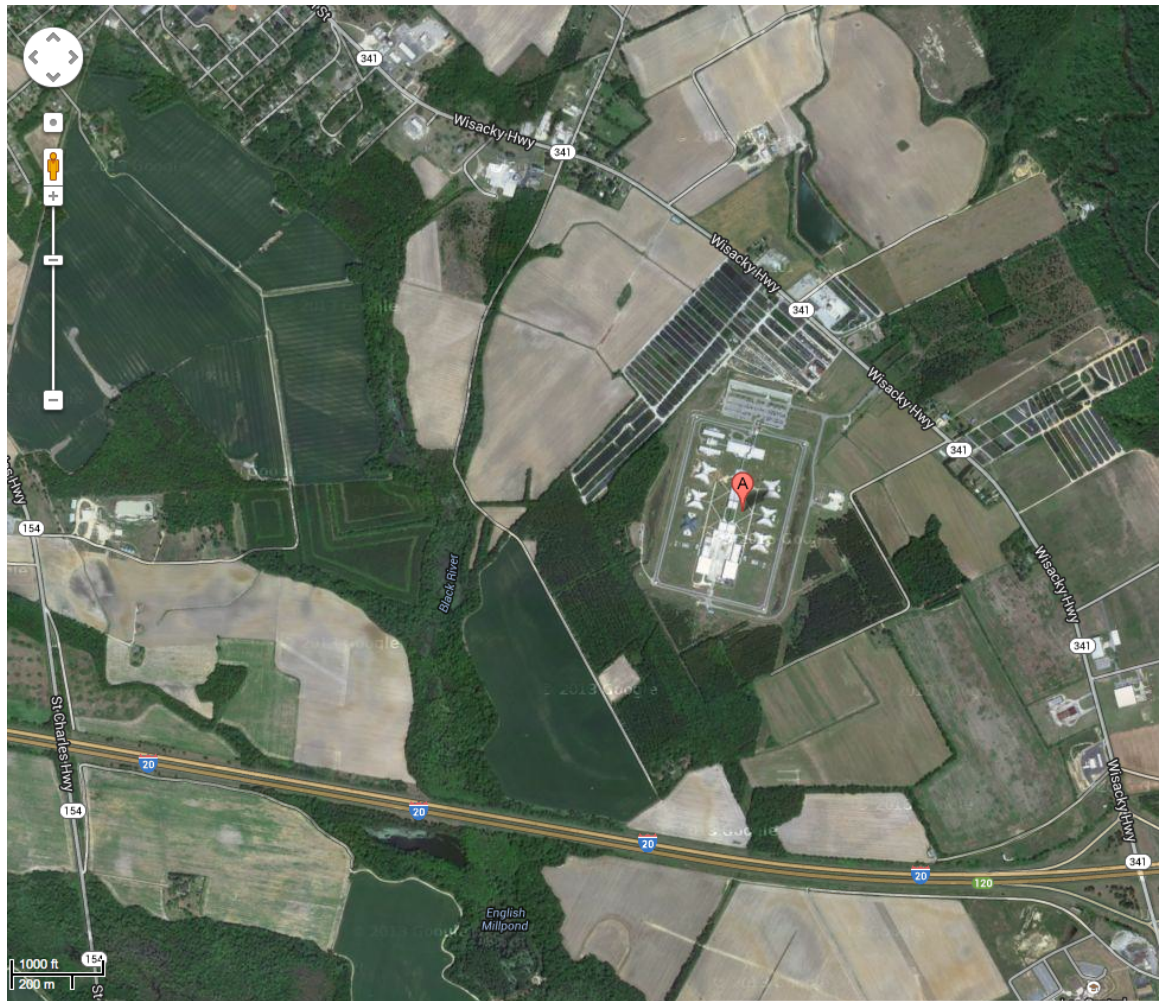
**Figure 4:** Sing Sing Correctional Facility, Ossining, NY and the nearby neighboring public streets and residences . (Google Maps)

It is impossible to deny cell phone access in all locations within such a prison without some “overjamming” unless geolocation technology is used in a prison that also has a large separation from the public. This applies to BOTH jamming and MAS. While the use of “green lists” could provide relief to the neighboring residences from the impact of an MAS system, it would not protect CMRS use on public streets and for visitors to neighboring residences.

Fortunately the geography of Sing Sing is rare in today’s prison world for maximum security prisons in the US. For a variety of practical reasons most maximum



security prisons are located in rural areas with large physical separations from the general public. For example, Lee Correctional Institution, Bishopville, SC, where Captain Robert Johnson was employed before he was shot answering the door of his home on the order of an inmate that was placed over a cell phone call is shown below:



**Figure 5:** Lee Correctional Institution, Bishopville, SC with more than 1000' separation from nearby public areas. (Google Maps)

The type of physical separation shown in Figure 4 is typically found at *most* , but not all, maximum security prisons in the US. The reality is that without this type of

distance separation no prison-based electronic denial system, either MAS or jamming, can both be effective within the prison and avoid impact on valid public use.

The previously cited CTIA interview alleges that “When they did jam an entire jail in Brazil, South Asia and Pakistan there was significant impact up to about 3 miles away”<sup>35</sup>. There is no question that poor engineering could result in tremendous overreach of cellular signals, whether they be MAS signals or jamming signals. But despite the cellular industry’s endless demands for more spectrum, the plain truth is that most of the growth of cellular capacity in the past 2 decades has *not* come from additional spectrum, but rather from infrastructure growth that has enabled denser and denser overlays of cell sites and frequency reuse. In cell systems today’s frequencies are reused at distances much less than “3 miles” and the reason this is possible is great advances in propagation prediction technology and cellular planning – a great accomplishment the cellular industry should be proud of. The same planning techniques that allow detailed prediction of cell site coverage and hence high frequency reuse, can also be used for planning MAS or jamming system coverage. But neither will work for an entire prison complex in tight geometries such as at Sing Sing. CTIA does not state what the geometries were in their cited examples of” Brazil, South Asia and Pakistan”.

The CTIA interview also cites public safety concerns about jamming interference to public safety communications. It does not explain why signals in well defined CMRS bands would inevitably spill over to public safety bands. The cellular industry is able to band limit its transmitters, as are all other FCC licensees, why would any jamming inevitably have emissions in an unintended band? It appears that the cellular industry

---

<sup>35</sup> <http://ctia.org/media/multimedia/sa/index.cfm/mma/june-09-wow-insider-interview-contraband-in-prisons> at 2:00

assume that any prison use of jamming ultimately authorized by FCC would have the same poor technology as jammers now marketed illegally in the US. Would one argue against legalizing medical marijuana use because the marijuana now bought from drug dealers is sometimes contaminated with dangerous chemical?

## **CELLULAR INDUSTRY NEEDS ADDITIONAL MANDATES BEYOND THOSE IN NPRM TO MAKE MAS RELIABLE IN THE LONG TERM**

We agree with the proposals in the NPRM on MAS, they will facilitate the introduction of MAS where it is practical and cost-effective. However, they fail to address other real MAS issues that were addressed in the GTL petition and ignored to date by the Commission and cellular industry. We are including with these comments p. 9-14 of the GTL petition that deals with additional measure to make MAS practical.

These fall into 4 categories:

- A requirement that CMRS carriers must agree to managed access leases of their spectrum if it is technically feasible in a specific installation without undue harm to legitimate CMRS uses, or, a formal determination that managed access systems can be "licensed" pursuant to the private commons provisions of Section 1.9080.
- A requirement that a CMRS carrier provide notice to managed access system operators within the carrier's service area in advance of making technical changes to the CMRS network that would adversely impact a managed access system's operations so that managed access system settings can be coordinated with the planned CMRS modifications.
- Explicit quantifiable and reasonable limits on the "over-coverage" of managed access systems.
- Explicit protection of E-911 performance in the managed access areas absent a specific exemption from the local PSAP?

The major 4 cellular carriers have agreed to spectrum leases in their service territory that would enable MAS. **HOWEVER**, maximum security prisons tend to be located in rural areas and the 4 major carriers are not the only CMRS carriers in the country. Indeed, in rural area other carriers have a much larger presence than in urban



areas. In addition as a result of the cellular industry repeated requests for more spectrum several hundred MHz of more spectrum will be coming available in the next few years for CMRS through the auction process and it is likely that there will be new carriers that do not even exist today.

Will ALL CMRS carriers now and in the future agree to the leases needed to implement MAS on reasonable financial terms? Since, in the view point of cellular interests, MAS is the only way to protect public safety from inmate cell phone calling it must cover all cellular bands and the financial demands must be fair and reasonable.

**Without a mandate for all CMRS carriers to sign MAS leases this is not a reasonable expectation.**

The CCST report reached a similar finding saying:

Relatedly, the lack of an FCC requirement for spectrum license owners (e.g. Verizon, AT&T, etc.) to allow for use of their spectrum within the prison area to be used for MAS is a key issue. Without this requirement, the state is forced to negotiate with each carrier on its own to enable the MAS operation. To date, the FCC has not created a policy for corrections departments at any level to acquire the permission from the spectrum owners for ways to control the calls (e.g. MAS or jamming). A coordinated effort of several states to petition the FCC to modify existing spectrum owners' agreements to require they provide unobstructed use of their spectrum within the geospatial confines of corrections facilities would be an important modification of regulations. If this effort is undertaken, the discussions could also include the possibility of using jamming technologies in some conditions.<sup>36</sup>

While the proposals in the NPRM are a positive step in this direction, they do not mandate spectrum leasing nor reasonable financial terms. Without this mandate MAS can not be effective. The promise of the 4 major carriers is not adequate since they do not control all the CMRS licenses near prison now and can not reasonably be expected to control all new spectrum near prisons as more spectrum become available.

---

<sup>36</sup> CCST Report at p. 19

Assuming that correctional systems follow the cellular industry urging and rely on MAS systems to protect the public, what happens if there is a technical change in the cellular system that affects the operation of the MAS? For example a new base station might be built closer to the prison that will require reconfiguration of the MAS transmitters and antennas in the prison to assure coverage. What about a technical change such a switch from 3G to 4G at a given base station for a given band? Does the carrier have to give the prison reasonable notice before making such a change that would defeat the effectiveness of the MAS? While the major 4 carriers may all intend to make such notifications to MAS leases, they are not required to and it is not reasonable to expect every CMRS licensee from now into the future to do so, particularly if failure to do so would obviate a large investment by the prison.

While cellular interests repeatedly decry the danger of “overjamming”, the reality is that MAS will inevitably have some excess coverage outside the prison unless there is a large buffer area such as in the previously discussed case of Lee Correctional Institution. Neighbors should be expected to complain when this happens. One way to manage this inevitable event is to adopt a quantifiable rule for excess coverage outside a prison, for example a requirement that in 80% of the places within 500 m of the correction facility border 80% of the time cellular service must be operable for a general user.

Finally, the Commission should clarify the role of E-911 in MAS systems. In some tests where E-911 calls were allowed, local PSAP operators were flooded with nuisance inmate calls. There is no general solution to this problem, but the Commission should allow PSAP operators and MAS operators to negotiate on a case-by-case basis on

how E-911 calls are handled.

### **The Present Statute and FCC Jurisdiction to Authorize Jamming**

It is unambiguously clear that at present FCC has never authorized any jamming and therefore jamming in a prison or nonprison context is now illegal and a criminal violation of §333<sup>37</sup> and §301<sup>38</sup>. The cellular industry seeks a further statement: that the Commission lacks jurisdiction to ever authorize jamming for nonfederal users under the terms of §333. While we understand while cellular interests seek such a determination, we find it contradictory to both the letter of the law and congressional intent.

**We ask the Commission to either make a clear and explicit finding on this point of law or to at least say that absent a finding that jamming is in the public interest in a specific case that it defers such a finding.**

Page 19-25 of the GTL petition, attached to these comments, give 3 legal approaches that would justify FCC jurisdiction to permit jamming if it found it in the public interest.

One approach deals with the legislative history of §333 that was clearly intended to criminalize jamming behavior regardless of whether the operator had a valid FCC license. (Prior to the adoption of §333, jamming was usually prosecuted as a violation of §301 for transmitting without a license. The record is clear that §333 was requested by FCC after a case where a legally licensed airline pilot jammed other aviation

---

<sup>37</sup> 47 U.S.C. 333 “No person shall willfully or maliciously interfere with or cause interference to any radio communications of any station licensed or authorized by or under this chapter or operated by the United States Government.”

<sup>38</sup> 47 U.S.C.301

transmissions in connection with a labor dispute and where the normal prosecution under §301 was not possible. There is no indication in the legislative history that either the FCC or Congress wished to limit the ability of FCC to authorize jamming if needed in the public interest.)

A second approach makes the case that if, *arguendo*, §333 forbids all jamming even with FCC authorization then such prohibition must apply equally to both nonfederal users authorized by FCC as well as federal users authorized by NTIA since §305 clearly exempts federal users only from §301 and §303 of the Act, not from all other provisions of Title III. Further the related provisions of 18 U.S.C. 1367 dealing with satellite jamming and adopted at nearly the same time explicitly exempts federal spectrum users while §333 does not. But since both FCC and NTIA agree that there is no statutory barrier to NTIA authorizing jamming by federal users, it must follow that §333 is not a jurisdictional barrier to FCC authorization of jamming if the Commission finds a context that is in the public interest and implements the policy change in accordance with the Administrative Procedures Act with notice and comment.

A third approach deals with allowing jamming by amending Section 22.3 of the Commission's Rules<sup>39</sup> to stop cell phone transmissions within prisons from being "authorized communications" and hence not licensed within the context of §333.

#### **AN ALTERNATIVE APPROACH – GEOLOCATION-BASED DENIAL**

Paragraph 77 of the NPRM invites comment on "comment on other technological solutions". We are glad to make such a proposal here: geolocation-based denial /"GBD".

---

<sup>39</sup> 47 C.F.R. 22.3

The basic problem with the MAS approach and even with the jamming approach is that their effectiveness depends on interaction with the cellular network near the prisons that is always changing. Any approach operated solely by the prison, whether MAS or jamming, puts a financial or technical burden on the local or state government prison which is in all likelihood beyond the resource available.<sup>40</sup> Furthermore, network changes, whether coordinated or not in advance, can require unanticipated expenditures by a correctional system that are beyond its control and generally outside of its budget cycle.

There are two basic parties involved in the prison cell phone prevention issue, the prison and the local CMRS carriers. This approach shifts the burden in most of the prisons with the worst problem, rural maximum security prisons, from the prison to the carrier that has significantly larger technical and financial resources available and all has the ability to control the network evolution that the prison does not.

This approach would permit a prison administration to ask the Commission to declare the prison outside the authorized service area of all CMRS carriers if the location met certain specified criterion. The key criterion would be that the prison had at least 300 m of space in all direction between secure areas accessible by prisoners and areas with unrestricted public access. Thus Sing Sing Correctional Facility would not qualify, but Lee Correctional Institution and most maximum security prisons would qualify.

---

<sup>40</sup> The contractual approach used by the California Department of Corrections of requiring the inmate telephone provider to provide MAS at no cost to the local government looks like a “free ride” for taxpayers, but really is not. While the inmate telephone provider has a financial incentive to block cell phone calls and thus increase calling via authorized and monitored inmate phones, the cost of the MAS technology will inevitably be added to the cost of inmate phones. In Docket 12-375 the Commission is already addressing the excessive cost of ICS.

Note that this approach is similar to the CCST recommendation previously mentioned: “Engage the cell phone carriers to identify use of their technology and to deny connections for unregistered cell phones from within prison locations”.<sup>41</sup>

If the Commission agrees to delete the prison from authorized service areas, under this proposal all carriers must then block all calls originating in the prison based on their location using existing E-911 technology and equipment. Under present FCC Rules<sup>42</sup> all CMRS carrier must achieve location accuracy of “300 meters for 90 percent of calls”. By January 18, 2016 “carriers shall comply in 70 percent of counties or PSAP service areas”. These accuracy goals may require additional base stations near some prisons in rural for triangulation for carriers not using A-GPS handsets, but is this not a reasonable price to be paid for protecting the public safety? Alternatively a carrier might decide just not to provide service near a rural prison and rely upon roaming. While carriers are reluctant to admit it, there are a lot of places in rural America without cell phone service or without a large number of carriers.<sup>43</sup> Thus a carrier would have a choice of either providing the geolocation accuracy that the Commission has already adopted as a general goal or removing service from the immediate vicinity of a rural maximum security prison and relying on roaming capabilities of other carriers. The number of rural maximum security prisons in the US is small, under 200. Eliminating some cellular service within a few hundred meters of these facilities, if that is what the carriers elect to do, will have no real impact on the net cellular coverage of the US in the usual metrics.

GBD is not a “magic bullet” for the prison cell phone problem. As indicated

---

<sup>41</sup> CCST Report at p. 7

<sup>42</sup> 47 C.F.R. 20.18

<sup>43</sup> <http://www.marcus-spectrum.com/Blog/files/BattlingSitesI.html>

earlier there is no magic bullet for this complex issue. But GBD is a low risk solution that will address rural maximum security prisons where most of the worst problems are. Furthermore it will do so without putting unrealistic choices on financially strapped local governments and without compromising the goals of Docket 12-375 to bring ICS costs down to a market based level consistent with the security requirements of ICS.

As discussed previously, reliable effective implementation of MAS requires both mandatory carrier participation and mandatory coordination of network changes with the MAS operator. Shifting the burden of cell phone denial to the CMRS carrier increases some burdens on the carrier but may be more attractive than the terms that are otherwise required to make MAS reliable for public safety. In particular, the cellular carriers may well find any requirement to coordinate network changes with MAS operators – a pragmatic requirement proposed in the GTL petition necessary to keep MAS reliable – a very burdensome requirement. If the Commission agrees with GTL and us that such continuing coordination is mandatory in MAS installations then the option of carrier responsibility proposed here may well be less burdensome to the carriers.

GBD depends on geolocation of cellphones and does not require electronics within the secure area of the prison that is subject to attack and must be maintained in a very hostile environment. All components can be located outside the secure perimeter of the prison.

## CONCLUSIONS

These comments point out that there is no “magic bullet” that will prevent the grave problem of illicit cell phone use in prison. While the cell phone industry did not intentionally cause this problem, to date its focus on preventing all jamming in all contexts and minimizing its burden has blocked significant improvement.

While it would be nice to think MAS is a “magic bullet”, neither it nor any other one technology will solve the problem completely. Prisons vary greatly due to their construction material, physical layout, and proximity to public roads and the general public. No one solution can be expected to work in all prisons. But burdening state and local government prison administrations with limited budgets and scant technical resources with the burden of expensive and complex MAS systems is unrealistic. Indeed, MAS will not be effective without clear mandates by the Commission for carrier participation and *a priori* coordination of network changes – something that carriers are certain to object to.

The cost of implementing MAS is not really discussed. While it is tempting to shift the cost to ICS carriers, placing this new burden on ICS users will be inconsistent with the goals of Docket 12-375. The Commission should have a clear economic model for MAS before it accepts it as the major approach to the prison cell phone problem.

The Commission should clarify what it really believes the meaning of §333 is with respect to its authority to authorize jamming or explicitly state that it defers that decision until presented with a case for jamming in the public interest. Three approaches are given that would permit legal use of jamming notwithstanding §333.



These comments give the new approach of geolocation-based denial for addressing this problem. GBD shifts the bulk of the burden from the correctional administrations to the CMRS carriers who have better financial and technical resources to deal with these issues. However, it also avoids necessary carrier requirements for mandatory participation and coordination with MAS operators of all network changes. While carrier may prefer to shift the burden to prison administrators and not have any new requirements, an objective and pragmatic review of the net cost of both options may make GBD more attractive.

The CCST report gives an independent study of the prison/cell phone problem from a source with a good technical policy reputation. We urge the Commission to study this report and its findings and not just the summary in the NPRM.

The NPRM explicitly addresses the “preferences”<sup>44</sup> of the cellular industry. However, this is literally a matter of life and death as shown by the photographs of 2 victims of the *status quo* at the beginning of these comments. The Commission should focus on the overall public interest involved here even if it is uncomfortable for the cellular interests who should be grateful for the generous attention the Commission has been giving their concerns for additional spectrum.

A handwritten signature in black ink, appearing to read "Michael J. Marcus", is enclosed within a thin black rectangular border.

Michael J. Marcus, Sc.D, F-IEEE  
Director  
Marcus Spectrum Solutions LLC  
8026 Cypress Grove Lane  
Cabin John, MD 20818

301-229-7714  
[mjmarcus@marcus-spectrum.com](mailto:mjmarcus@marcus-spectrum.com)

cc: Julius Knapp  
Ruth Milkman  
David Turetsky  
John Leibovitz

---

<sup>44</sup> NPRM at para. 20